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EXAMINER	
BROWN JR, NATHAN H	

ART UNIT	PAPER NUMBER
2129	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,322	MOGK ET AL.	
	Examiner	Art Unit	
	NATHAN H. BROWN JR	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *(3)* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3, 10, and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Examiner's Detailed Office Action

1. This Office Action is responsive to the communication for application 10/758,322, filed July 28, 2008.

2. Claims 1, 3, 10, and 12 are pending. Claims 1 and 12 are currently amended. Claims 4-9 and 11 are cancelled. Claim 3 is previously presented. Claim 10 is original.

3. After the previous office action, claims 1, 3, 5, and 8-12 stood rejected.

Claim Rejections - 35 USC § 112, 1st

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in

the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 10 recites a "computer digital storage medium" which is not disclosed in the specification and is therefore considered new matter.

6. Claims 1, 3, and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Amended independent claim 1 recites a "(a) storing training input data". However, no "computer digital storage medium" or any other computer hardware for data storage is disclosed in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention as claimed. Dependent claims 3 and 10 provide further algorithmic and mathematical limitation to claim 1 but fail to cure the deficiency of claim. Therefore claims 1, 3, and 10 are considered non-statutory under 35 U.S.C. 112, first paragraph.

7. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Amended independent claim 12 recites a "(a) storing training input data". However, no "computer digital storage medium" or any other computer hardware for data storage is disclosed in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention as claimed.

8. Claims 1, 3, 10, and 12 are rejected under 35 U.S.C. 112, first paragraph. Specifically, if the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112.; In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) MPEP 2107.01 (IV).

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1, 3, 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter: abstraction and/or algorithm. Amended independent claim 1 recites a "method for making a neural network prediction" having a final result of "making the neural network prediction by disregarding the input data record if it is outside the working range of the used neural network and processing the input data record by the used neural network if it is inside the working range". Examiner considers convex envelopes, working ranges, and simplexes to be mathematical abstractions. Examiner considers the steps (a)-(d) to comprise an algorithm. Clearly, claim 1 recites the 101 judicial exceptions of abstraction and algorithm. Claim 1 recites no physical transformation and while a final result of "making the neural network prediction by disregarding the input data record if it is outside the working range of the used neural network

and processing the input data record by the used neural network if it is inside the working range" may be concrete and useful, it is not tangible as "making the neural network prediction by disregarding the input data record if it is outside the working range of the used neural network and processing the input data record by the used neural network if it is inside the working range" refers to nothing other than the end state of the neural network and benefits no other thing than the neural network itself. Thus, claim 1 is considered to be non-statutory under 35 U.S.C. 101. Dependent claims 3 and 10 provide further algorithmic limitation to claim 1, but fail to cure the deficiencies of claim 1. Therefore, claims 1, 3, 10 are considered to be non-statutory under 35 U.S.C. 101.

11. Claims 1, 3, 10 are rejected under 35 U.S.C. 101 because the claimed invention has no practical application. Claims 1, 3, 10 are considered to recite no more than the 101 judicial exceptions of abstraction and algorithm (see above) and thus have no practical application.

12. Claims 12 is rejected under 35 U.S.C. 101 for the same reasons claim 1.

Response to Arguments

13. Applicant's arguments filed July 28, 2008 have been fully considered.

Objection to Claims 1,8, 11 and 12

Applicants argue:

> The Examiner rejected claims 1, 8, 11 and 12 for several informalities. Claims 8 and 11 have been canceled, without prejudice, and thus the objection with respect to these claims is now moot. Applicants have amended claims 1 and 12 in accordance with the Examiner's suggestions.
>
> Accordingly, withdrawal of the objections in view of the amendments to the claims is therefore requested.

Examiner responds:

> Examiner withdraws objections to amended claims 1 and 12.

Rejection of Claims 1, 3, 5 and 8-12 Under 35 U.S.C. §112, 1st and 2nd Paragraphs

Applicants argue:

> Claims 1, 3, 5 and 8-12 are rejected as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the Examiner

asserts "independent claims 1, 8, 11 and 12 recite 'improving a neural network prediction...based on whether the input data record is in a working range of a neural network.'" As best understood by Applicants, the Examiner's reasoning is that the term "improving" does not accurately reflect the improvement and thus similar to the objections to the claims asserted above, should be amended to read "making." Claims 5 and 8-11 have been canceled, without prejudice, and thus the rejection with respect to these claims is now moot. Claims 1, 3 and 12 have been amended in accordance with the Examiner's suggestion to state "making" rather than "improving" and thus withdrawal of the rejections under 35 U.S.C. §112, first paragraph, is requested.

Examiner responds:

Examiner's reasoning was that the specification provided no disclosure of how a training or input data record, being inside or outside of a convex envelope (working range of a neural network), leads to the "improving" a neural network's learning (e.g., increase in the rate of convergence to an optimal weight matrix). What seems to be disclosed is: (1) an algorithm for forming a convex hull on positive training vectors and then (2) a classification method where an input vector to be classified is checked to determine if it would be in the interior of the convex hull formed in step (1) before being applied to the neural network for classification. Examiner reasoned that once the convex hull based on positive training vectors was formed, the space of positive negative training data was

partitioned and all that was needed, subsequently, for input data classification was the convex hull (i.e., if the input data could be shown to fall into the convex hull, it was in the class of positive training data); thus the neural network was rendered superfluous. Applicants' use of "making" in place of "improving" does not fix the seeming redundancy of computing a convex hull on training data *and* training a neural network as well. Claims 1, 3, 10, and 12 remain rejected under 35 U.S.C. §112, first and second paragraphs.

Rejection of Claims 1, 8, 9, 10, 11, and 12 Under 35 U.S.C. §103(a)

Applicants argue:

Independent Claim 1

> …this passage of Zakrzewski discloses that in step 34 if the point of interest is not within the simplex or not on the boundary of the simplex, operation advances to step 40 where the next combination of n+1 data points is selected to form the vertices of the next simplex to be tested. There is no disclosure or suggestion of the "next simplex" as checking whether it "contains the intersection point and a section of the path," as required in claim 1. Furthermore, in step (vi) the second simplex which contains the intersection point and a section of the path is formed from the same number of points from the training....i...nput data records as previously used in

steps (i) & (ii) to form the first simplex, whereas in Zakrzewski the "next simplex" is formed by the "next combination of n+1 data points" than those data points used to form the first simplex.

Examiner responds:

Examiner finds Applicants' argument persuasive and

withdraws the rejection of claim 1 under 35 U.S.C. §103(a).

Applicants argue:

Independent Claim 12

…Examiner has failed to set forth where any of the prior art references teach sub-steps (i)-(vi) stating instead that they are merely an obvious variation of sub-steps (i)-(vi) of claim 1. Specifically, the Examiner "asserts that steps (i)-(vi) are an obvious variation of step (i)-(vi) of claim t (see above) where the vectors used to construct the interior search set are simply normalized and thus an obvious variation of interpolation technique of Zakrzewski)." {April 30, 2008 Non-Final Office Action: p. 17, 11. 6-8} Applicants respectfully traverse the Examiner's obviousness assertion. First, clear non-obvious distinctions exist among the sub-steps of these two claims. By way of illustrative example, sub-step (v) of claim 12 calls for the step of "deleting" whereas there is no obvious variation of such step in claim 1.

Examiner responds:

Examiner finds Applicants' argument persuasive and

withdraws the rejection of claim 12 under 35 U.S.C.

§103(a).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan H. Brown, Jr. whose telephone number is 571-272- 8632. The examiner can normally be reached on M-F 0830-1700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nathan H. Brown, Jr.
July 23, 2008
/David R Vincent/

Supervisory Patent Examiner, Art Unit 2129